

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of the Claims:**

1-116. (Cancelled)

117. (Previously presented) A composite material comprising:

- (a) a matrix, wherein said matrix comprises a polymer; and
- (b) a single-wall carbon nanotube material embedded within said matrix, wherein said single-wall carbon nanotube material comprises fibers of greater than  $10^6$  single-wall carbon nanotubes.

118. (Cancelled)

119. (Previously presented) The composite material of claim 117, wherein said polymer comprises a thermosetting polymer.

120. (Previously presented) The composite material of claim 119, wherein said thermosetting polymer comprises a polymeric material selected from the group consisting of phthalic/maleic type polyesters, vinyl esters, epoxies, phenolics, cyanates, bismaleimides, and nadic end-capped polyimides.

121. (Previously presented) The composite material of claim 117, wherein said polymer comprises a thermoplastic polymer.

122. (Previously presented) The composite material of claim 121, wherein said thermoplastic polymer comprises a polymeric material selected from the group consisting of polysulfones, polyamides, polycarbonates, polyphenylene oxides, polysulfides, polyether ether ketone, polyether sulfones, polyamide-imides, polyetherimides, polyimides, polyarylates, and liquid crystalline polyesters.

123-128. (Cancelled)

129. (Previously presented) The composite material of claim 117 further comprising an additional fibrous material.
130. (Previously presented) A composite material comprising:
- (a) a matrix, wherein said matrix comprises a polymer; and
  - (b) a single-wall carbon nanotube material embedded within said matrix, wherein said single-wall carbon nanotube material is derivatized to chemically react with said matrix material.
131. (Previously presented) A method for producing a composite material comprising a single-wall carbon nanotube material, wherein said single-wall carbon nanotube material comprises fibers of greater than  $10^6$  single-wall carbon nanotubes, and wherein said method comprises:
- (a) preparing a matrix material;
  - (b) combining said single-wall carbon nanotube material with said matrix material; and
  - (c) forming said composite material.
- 132-134. (Cancelled)
135. (Previously presented) The method of claim 131, wherein said matrix material is a fluid and wherein said single-wall carbon nanotube material is in a pre-formed arrangement.
136. (Previously presented) A method of producing a composite material comprising carbon nanotube material, wherein said single-wall carbon nanotube material comprises fibers of greater than  $10^6$  single-wall carbon nanotubes, and wherein said method comprises:
- (a) preparing an assembly of a fibrous material;
  - (b) adding said carbon nanotube material to said fibrous material; and
  - (c) adding a matrix material to said carbon nanotube material and said fibrous material.

137. (Previously presented) The method of claim 136, wherein said fibrous materials are arranged in a two-dimensional sheet, and some portion of the said carbon nanotube material is oriented in a direction other than parallel to said sheet.
- 138-163. (Cancelled)
164. (Previously presented) The composite material of claim 130 further comprising an additional fibrous material.
165. (Cancelled)
166. (Previously presented) The composite material of claim 117 wherein said single-wall carbon nanotube material is derivatized to chemically react with said matrix material.
- 167-169. (Cancelled)
170. (Previously presented) The composite material of claim 117 wherein the single-wall carbon nanotube material comprises single-wall carbon nanotubes having lengths in the range between 5 and 500 nm.
171. (Previously presented) A composite material comprising carbon nanotubes, a fibrous structural constituent and a matrix material, wherein the matrix material comprises a polymer and the fibrous structural constituent comprises carbon, and wherein the carbon nanotubes comprise single-wall carbon nanotube fibers, wherein each of the single-wall carbon nanotube fibers comprises at least  $10^6$  individual single-wall carbon nanotubes.
172. (Previously presented) The composite material of claim 171, wherein the composite further comprises a second fibrous structural constituent, wherein the second fibrous structural constituent comprises a material selected from the group consisting of cellulose, glass, graphite, silicon oxide, carbon steel, aluminum oxide, beryllium, beryllium oxide, boron, boron carbide, boron nitride, chromium, copper, iron, nickel, silicon carbide, silicon nitride, alumina yarn, alumina-boria-silica, zirconia-silica,

zircona, alumina, quartz, molybdenum, stainless steel, titanium boride, tungsten, zirconium oxide and combinations thereof.

173. (Cancelled)

174. (Previously presented) The composite material of claim 171, wherein the polymer comprises a thermosetting polymer.

175. (Previously presented) The composite material of claim 174 wherein the thermosetting polymer comprises a polymeric material selected from the group consisting of phthalic/maleic type polyesters, vinyl esters, epoxies, phenolics, cyanates, bismaleimides and nadic end-capped polyimides.

176. (Previously presented) The composite material of claim 171, wherein the polymer comprises a thermoplastic polymer.

177. (Previously presented) The composite material of claim 176 wherein the thermoplastic polymer comprises a polymeric material selected from the group consisting of polysulfones, polyamides, polycarbonates, polyphenylene oxides, polysulfides, polyether ether ketones, polyether sulfones, polyamide-imides, polyetherimides, polyimides, polyarylates, liquid crystalline polyesters and combinations thereof.

178-183. (Cancelled)

184. (Previously presented) The composite material of claim 171 wherein the carbon nanotubes comprise single-wall carbon nanotubes that have been subjected to a purification process.

185. (Currently amended) A composite material of comprising carbon nanotubes, a fibrous structural constituent and a matrix material, wherein the matrix material comprises a polymer, wherein the fibrous structural constituent comprises carbon, and wherein the carbon nanotubes comprise single-wall carbon nanotubes that have a homogeneous

characteristic selected from the group consisting of lengths, diameters, helicities and combinations thereof.

186-187. (Cancelled)

188. (Previously presented) The composite material of claim 171 wherein the carbon nanotubes comprise single-wall carbon nanotubes in a form selected from the group consisting of felts, bucky papers, cut lengths of single-wall carbon nanotube ropes, cut lengths of single-wall carbon nanotube fibers and combinations thereof.

189. (Previously presented) The composite material of claim 171 wherein the composite material further comprises:

- (a) a first area wherein a first portion of single-wall carbon nanotubes have a first homogeneous characteristic selected from the group consisting of lengths, diameters, helicities and combinations thereof;
- (b) a second area wherein a second portion of single-wall carbon nanotubes have a second homogeneous characteristic selected from the group consisting of lengths, diameters, helicities and combinations thereof; and
- (c) wherein the first homogeneous characteristic is different from the second homogeneous characteristic.

190. (Previously presented) The composite material of claim 171 wherein the carbon nanotubes comprise chemically-derivatized single-wall carbon nanotubes, chemically-derivatized ropes of single-wall carbon nanotubes, chemically-derivatized fibers and combinations thereof.

191. (Previously presented) The composite material of claim 190 wherein the chemically-derivatized single-wall carbon nanotubes have side-wall defects.

192. (Previously presented) The composite material of claim 190 wherein the chemically-derivatized single-wall carbon nanotubes have side-wall bonding sites.

193. (Previously presented) The composite material of claim 171 further comprising single-wall carbon nanotubes having side-wall modifications capable of an interaction with the matrix material, wherein the interaction is selected from the group consisting of physical, chemical and combinations thereof.
194. (Previously presented) A composite material comprising carbon nanotubes, a fibrous structural constituent and a matrix material, wherein
- (a) the matrix material comprises a polymer,
  - (b) the fibrous structural constituent comprises carbon,
  - (c) the carbon nanotubes comprise chemically-derivatized single-wall carbon nanotubes, chemically-derivatized ropes of single-wall carbon nanotubes, chemically-derivatized fibers or combinations thereof,
  - (d) the chemically-derivatized single-wall carbon nanotubes have side-wall bonding sites, and
  - (e) at least one of the side-wall defects comprises replacement of at least one carbon atom in the single-wall carbon nanotube lattice with at least one non-carbon atom.
195. (Previously presented) The composite material of claim 194 wherein the non-carbon atom is selected from the group consisting of boron, nitrogen, and combinations thereof.
- 196-200. (Cancelled)
201. (Previously presented) A composite comprising derivatized single-wall carbon nanotubes and a polymer, wherein the polymer has at least one pendant group capable of a chemical reaction with the derivatized single-wall carbon nanotubes.
202. (Previously presented) The composite of claim 201 wherein the chemical reaction is promoted by photolysis.
203. (Previously presented) A method for producing a composite material comprising:
- (a) introducing a matrix material, wherein the matrix material comprises a polymer;

- (b) combining a carbon nanotube material with the matrix material, wherein the carbon nanotube material comprises a plurality of single-wall carbon nanotubes and wherein the single-wall carbon nanotubes are derivatized to facilitate bonding to other single-wall carbon nanotubes, the matrix material or both; and
  - (c) subsequently forming the composite material.
204. (Cancelled)
205. (Previously presented) The method of claim 203 wherein the carbon nanotube material is dispersed in a liquid carrier.
206. (Previously presented) The method of claim 205 wherein the liquid carrier comprises a liquid selected from the group consisting of water and an organic solvent.
- 207-208. (Cancelled)
209. (Previously presented) The method of claim 203 wherein the plurality of single-wall carbon nanotubes is aligned by an electric field before the forming step.
210. (Cancelled)
211. (Previously presented) The method of claim 203 further comprising pre-forming the plurality of single-wall carbon nanotubes into a structure before the combining step.
212. (Previously presented) The method of claim 203 further comprising combining a fibrous material with the carbon nanotube material and the matrix material.
213. (Cancelled)
214. (Previously presented) The method of claim 135 wherein the pre-formed arrangement is selected from the group consisting of a bucky paper and a felt.